Œdema of the larynx is sometimes the immediate cause of death, as recorded by Stromeyer[1] and others.

Out of 25 cases in which the result is known, the abscess was not opened in 10 cases; of these, all but one died, this being 82 per cent. of the entire number of deaths, which was 11. In most of these cases the diagnosis was made post-mortem. Five ruptured spontaneously; of these only one died (of broncho-pneumonia after tracheotomy). Ten abscesses were opened, and in this class only one died—the infant already referred to, who had had variola.

The treatment to be pursued is plainly indicated by the above, namely, a careful external and internal examination of the larynx of every case presenting symptoms similar to those detailed, and an immediate opening of any swelling giving the appearances described in the early part of this article.

Soothing or stimulating applications by means of the laryngeal brush may be used if the case does not progress satisfactorily after the abscess has been opened.

Cysts can scarcely be mistaken, on account of their lack of redness, their regularity and the well-marked vascular ramification on their surface.

New growths may, at first sight, cause much difficulty in diagnosis; but the history, seat, cause, and generally the consistence, will enable one to differentiate them.

Abscesses due to perichondritis or chondritis, while presenting similar appearances occasionally, can be excluded by careful attention to the patient's general condition, history of present illness, and examination by the probe, when necrosed or roughened cartilage may be felt.

For help in looking up and translating German references, the writer desires to acknowledge his great indebtedness to Dr. C. J. Colles, of this city.

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REPORT OF A CASE OF INJURY TO THE HEAD.

DEATH AFTER FIFTEEN YEARS FROM OTITIC MENINGITIS. EXTENSIVE NECROSIS OF PETROUS PORTION OF TEMPORAL BONE. AUTOPSY.

By J. B. Shapleigh, M.D.,
of St. Louis, Mo.

Although the cerebral lesions from aural disease have been reported in such abundance as to make them familiar to all, yet the following case presents features perhaps sufficiently unusual and interesting to justify its addition to the list:

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[1] Stromeyer, quoted by Cohen—Diseases of the Throat.

CASE.—Andrew S., colored, aged thirty-nine, was admitted to the City Hospital on September 4, 1889, with a diagnosis of malaria. Family history and hygienic surroundings good. Has drunk to excess in his, time and uses tobacco. Has had malarial fever several times, and about twenty-five years ago contracted a venereal sore, supposed to have been chancroid. About fifteen years ago he was struck on the left side of the head with an ax and rendered unconscious for a few minutes. On regaining consciousness, he was very weak and fainted from loss of blood. He recovered from the injury in about three weeks, and was apparently as well and hearty as ever. After nine or ten months, however, he began to suffer from headache, which disappeared on the escape of pus from the wound on the side of the head. He has had similar attacks about once in every two years; relief being obtained in the same way, except that about eight years ago he noticed that the pus came from the left ear instead of the wound.

Present condition.—Patient complains of intense headache. Examination of the head reveals a scar behind and slightly above the left ear, extending downward and backward for a distance of about four inches. There is complete left facial paralysis. Patient cannot open his mouth more than about half an inch. He states that this condition and the paralysis date from the injury of fifteen years ago.

There are no other signs or symptoms of paralysis to date. Mobility and sensibility in the extremities seem to be normal. The headache was at first confined to the left side in the vicinity of the scar, but now extends over the entire head and down the middle of the back. He has had some fever and drowsiness, but no rigors or chills.

On September 10th I was asked to examine the patient's ear. His condition had not changed materially during the preceding six days. The auricle was in normal position and presented nothing unusual. The external auditory canal was completely occluded at a depth of one-half inch. This cul-de-sac contained a small amount of cerumen only. It was lined throughout with normal skin. The opposing wall offered firm resistance to the probe, and to the needle gave the impression of bone covered by a layer of fibrous tissue. The left temporo-maxillary articulation was very prominent, and the mastoid process seemed to be placed further forward and downward than usual..

There was no sign of any inflammation about the ear or surrounding parts—no pain, tenderness, redness, or swelling over the mastoid, no congestion of the auditory meatus; and there had been nothing to call the patient's attention to the ear for at least two years. Hearing, both by air and bone conduction, was *nil.* Patient stated that he "had not heard with that ear since the accident, and that his face had been stiff since then." Vertigo was present in a moderate degree. I could not ascertain whether or not it had been noticed in previous attacks. The intellectual faculties did not seem to be impaired. The diagnosis made was either a meningitis or cerebral abscess, probably resulting from ear disease—the absence of symptoms of compression at this stage favoring the former.

September 13. Vomiting last night and to-day. Hiccough this morning for several hours. Groans and begins to talk incoherently.

14th. Growing rapidly worse. Frequent vomiting, unchecked by bismuth and morphine.

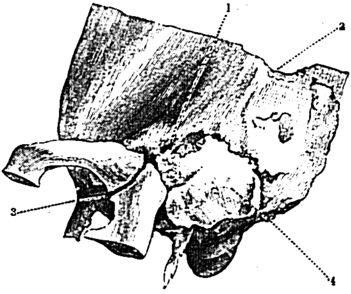
I saw the patient again at this time, and, although no symptom had developed tending to localize the cerebral trouble, advised, as a last resort, trephining the skull, suggesting a point one and one-fourth inches above and behind the external meatus as the spot at which to apply the trephine.

Dr. Dalton operated on the next day, enlarging the trephine opening to admit the finger. Nothing being found in this way, an aspirator needle was carefully inserted into the brain in various directions. No pus was obtained, but a considerable quantity of rather bloody fluid escaped, probably from the lateral ventricles. The patient did not bear the operation well, and died in about ten hours.

Autopsy.—On removing the brain quite a hemorrhage was seen under the pia mater on the left parietal lobe. The pia mater at the base of the brain was thickened and opaque, and pus was found in its meshes and under it. On section, both lateral ventricles were found distended by a blood-stained fluid.

In the left occipital lobe was a cavity as large as a pigeon's egg, with smooth, firm walls, and containing a purulent fluid. In the cerebellum on the left side of the vermiform process was a smaller cavity as large as a hazelnut, containing a purulent looking fluid, while to the right was a pinkish mass of about the same size—apparently a new growth.

Fig. 1.



Outer surface of temporal bone.

1. External auditory meatus. 2. Trephine opening. 3. Bony mass on inner side of neck of inferior maxilla. 4. Mastoid process.

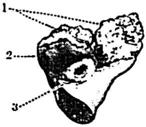
The thickened dura mater was adherent to the greater part of the petrous bone, but was slightly elevated from the posterior surface over a cavity presently to be described; here also the thickening was greatest. No perforation of the dura was found, but the pus had burrowed under it as far as the foramen magnum. Pus was also found in the internal auditory canal. No lesions of importance were found in the other organs.

Examination of the temporal bone showed that the greater portion of the mastoid process had been completely separated from its base and was displaced forward and a little downward, being held in its new position by a mass of dense fibrous tissue. The mastoid cells were obliterated. To the inner side of the neck of the inferior maxilla was firmly attached by osseous union a mass of bone. This was probably the condyle which had been cut off by the blow.

The articular surface of the glenoid cavity was destroyed and a false ankylosis formed. The inability to open the mouth resulted from this fibrous union as well as the adherent bony mass.

The posterior border of the inferior maxilla and the anterior border of the displaced mastoid were in contact, thus entirely blocking the external meatus, except above, where the closure was completed by a band of very dense fibrous tissue stretching from the zygoma to the anterior and upper border of the mastoid. The inner portion of the meatus was patent and contained a little pus.

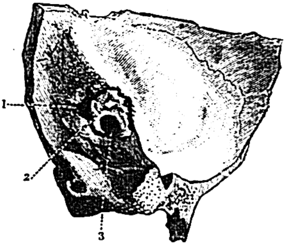
FIG. 2.



Inferior maxilla—seen from in front and above.
1. Rough articular surfaces. 2. Bony mass. 3. Coronoid process.

The membrana tympani was slightly thickened and perforated in its lower portion. The malleus and incus were in position, but the stapes could not be found. It had probably been destroyed by the carious process. The petrous portion of the temporal bone was the seat of extensive necrosis, which had almost completely enucleated the bony capsule of the labyrinth, the lower surface alone still maintaining its attachment to the pyramid. The necrosis was most marked in the softer bone on the outer side of the labyrinth, where quite a cavity had been

FIG. 3.



Inner surface of temporal bone.
1. Opening on posterior surface. 2. Necrosed bone. 3. Inferior auditory meatus.

formed, opening on the posterior surface of the petrous portion at about the site of the aquæductus vestibuli. It was over this cavity that the dura mater was elevated.

The anterior wall of the tympanum presented an opening into the carotid canal about the size of an apple-seed. A sinus opening on the promontory led through the vestibule into the internal auditory meatus penetrating its septum to the outer side and just below the horizontal ridge. The wall of the Fallopian canal was eroded from above the centre of the oval window backward to its downward turn. Here it entered the cavity above mentioned and was lost, to be found again a short distance above the stylo-mastoid foramen. The wall between this cavity and the tympanum—that is, the posterior wall and angle of the latter—was perforated in many places and presented a sieve-like appearance.

Necrosis of the temporal bone, even of parts of the labyrinth, is not of necessity fatal. Exfoliation may occur and the sequestrum be removed through the external meatus or the mastoid process.

Cases of this kind, where the sequestra proved to be parts of the labyrinth, have been reported by many observers, among them Schwartze (*Arch. of Otol.*, vol. ix.), Politzer, Toynbee, Gruber, Pomeroy (*Trans. Amer. Otol. Soc.*, 1872), and Agnew (*Amer. Med. Times*, vol. vi.). Exfoliation of the entire labyrinth is much rarer. It may, however, occur; the dura mater by thickening and proliferation of connective tissue on its outer surface, being able to resist the spread of the inflammation and prevent the invasion of the cranial cavity. Toynbee reports such a case (*Arch. of Otol.*, vol. i.), where the sequestrum included the entire labyrinth with the internal auditory meatus and the commencement of the facial canal. About the same lines of separation were forming in the case here reported.

Sir Philip Crampton, according to Wilde, removed a sequestrum consisting of the entire labyrinth with the inner wall of the tympanum. Gottstein (*Arch. of Otol.*, vol. xvi.) removed from a girl of eight years a sequestrum in which could be seen a part of the squamous portion of the temporal bone, of the annulus tympanicus, of the mastoid process, and of the labyrinth with the fenestra ovalis.

Though the entrance of pus into the cerebral cavity is not necessary to the occurrence of meningitis or abscess of the brain, it may occur in several ways. Most commonly, perhaps, it breaks through the tegmen tympani or the roof of the antrum; or the inroad may be through the posterior surface of the petrous bone, sometimes without injury to the labyrinth, sometimes with its partial destruction or entire separation from the surrounding bone; or it may enter through the internal auditory meatus, to which access is gained by erosion of the wall of either a semicircular canal, the cochlea, the vestibule, the facial canal, or through either or both the labyrinthine fenestræ. It may advance by several of these paths simultaneously.

In the case reported the pus forced its way through the cochlea, vestibule, and facial canal into the internal meatus, thence to the brain; the advance in other directions being prevented by protective thickening of the dura mater.

The autopsy fully explains the symptoms presented by the patient on admission to the hospital—viz., headache, vertigo, fever, deafness, and facial paralysis. The patient stated that the deafness and paralysis appeared at once after the injury. With regard to the former he might easily have been mistaken, but scarcely in regard to the latter. I am inclined to believe that the blow injured the facial nerve in the descending portion of the Fallopian canal, thus causing immediate facial paralysis, but that the hearing was at first only interfered with by the occlusion of the external meatus and while of so little practical use to the patient as to be considered lost, only became absolutely *nil* when the suppuration had advanced to the labyrinth.

In regard to treatment, the question naturally arises, Ought an attempt to have been made to penetrate the external meatus or to open the mastoid?

With the information to be gained ante-mortem I think we must answer in the negative. First, the indications were that the canal was closed by bone, probably the superior-posterior wall of the osseous meatus driven in by the direct force of the blow. Operations for relief of complete atresia of this nature are difficult, and not to be undertaken without some favorable information or inference as to the condition of the deeper parts of the ear. All the facts obtainable in regard to this point were decidedly unfavorable. Again, supposing that, although two years had passed with no aural symptoms, the disease had originated in the ear, the history of the case and the absence of all signs of mastoid inflammation pointed to the petrous portion of the temporal bone as the probable site of the trouble rather than the mastoid itself. Finally, cerebral implication was so evident that any operation must have been considered only as a last resort, and, under the circumstances, it was thought wiser to wait for some symptom to develop which might aid in localizing the operation. As none appeared, the trephine was applied in the situation best suited for reaching both the middle and posterior fossæ of the skull.